

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

COURSE PLAN – PART I			
<b>Course Title</b>	Data Communications and Networks		
<b>Course Code</b>	CSPC27	<b>No. of Credits</b>	3
<b>Course Code of Pre-requisite subject(s)</b>	-		
<b>Session</b>	Jan-2018	<b>Section (if, applicable)</b>	II yr –‘B’
<b>Name of Faculty</b>	R.Sasikala	<b>Department</b>	Computer Science and Engineering
<b>Email</b>	sasir@nitt.edu	<b>Telephone No.</b>	9994492942
<b>Name of Course Coordinator(s)</b>			
<b>E-mail</b>		<b>Telephone No.</b>	
<b>Course Type</b>	Core course		
<b>Syllabus (approved in BoS)</b>			
<p>UNIT-I            Introduction to computer networks: Network –Component and Categories –Topologies – Transmission Media –Reference Models: ISO/OSI Model and TCP/IP Model.*</p> <p>UNIT-II            Physical Layer: Digital and analog Signals, Periodic Analog Signals, Transmission Impairments Digital data transmission techniques, Analog data transmission techniques, Multiplexing and SpreadSpectrum.*</p> <p>UNIT-III            Data Link Layer: Error –Detection and Correction –Parity –LRC-CRC –Hamming Code –Flow Control and Error Control –Stop and wait –ARQ –Sliding window –HDLC –Multiple Access Protocols –IEEE 802.3 Ethernet.*</p> <p>UNIT-IV            Network Layer: PacketSwitching and Datagram approach –IP addressing methods –Subnetting –Routing –Distance Vector Routing –Link State Routing–Broadcast and Multicast Routing*.</p> <p>UNIT-V            Transport Layer: Transport Services –UDP -TCP -Congestion Control –Quality of Services (QOS) Application Layer: Domain Name Space(DNS) –Electronic Mail -WWW – CryptographyTechniques.*</p> <p>TextBooks            1.Andrew S. Tanenbaum and David J. Wetherall, “Computer Networks”, 5th edition, Prentice Hall, 2011            2.Behrouz A. Foruzan, “Data Communication and Networking”, 5th edition, Science Engineering &amp; MathPublications, 2013</p> <p>Reference Books            1.W. Stallings, "Data and Computer Communication", 10th Edition, Pearson Education,</p>			

COURSE OBJECTIVES								
<ul style="list-style-type: none"> <li>To provide insight about fundamental concepts and reference models(OSI and TCP/IP) and its functionalists.</li> <li>To gain comprehensive knowledge about the principles, protocols,and significance of layers in OSI and TCP/IP.</li> <li>To know the implementation of various protocols and cryptography techniques.</li> </ul>								
COURSE OUTCOMES (CO)								
Course Outcomes	Aligned Programme Outcomes (PO)							
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8
1. Ability to gain insight about basic network theory and layered communication architectures.	S	M	S	M	B	S	M	M
2. Ability to provide solutions to various problems in network theory.	S	S	S	M	S	S	B	S
3. Ability to conceptualize and design network stack.	S	M	B	M	M	S	B	M
S=0.6			M=0.4			B=0.0		

COURSE PLAN – PART II			
COURSE OVERVIEW			
<p>This course will cover the Basic concepts of Data communication and Networking,including the reference models(ISO-OSI , TCP/IP) , Functions and importance of each and every layer in the reference model and introduction to the cryptography techniques.</p>			
COURSE TEACHING AND LEARNING ACTIVITIES			
S.No	Week/ Contact Hours	Topic	Mode of Delivery
1.	1 <sup>st</sup> week (8.1.18-12.1.18)	Unit –I Introduction ,Components , Data flow Types of networks , categories of networks , Network Topologies-Transmission media	Chalk and Talk
2.	2 <sup>nd</sup> week (16.1.18-19.1.18)	Reference Models: Design issues and goals , Reason for layering-ISO/OSI Model – Functions of each Layer	Chalk and Talk
3.	3 <sup>rd</sup> week (22.1.18-23.1.18)	TCP/IP Model. UNIT-II-Physical Layer Digital and analog Signals, Periodic Analog Signals	Chalk and Talk
4.	4 <sup>th</sup> week (29.1.18-2.2.18)	Transmission Impairments-Digital data transmission techniques, Analog data transmission techniques	Chalk and Talk
5.	5 <sup>th</sup> week (5.2.18-9.2.18)	Multiplexing,Spread Spectrum. Unit –III Data Link Layer Error, Types of errors ,Error Detection, Parity check, LRC	Chalk and Talk
6.	6 <sup>th</sup> week (12.2.18-16.2.18)	Cyclic Redundancy Check Error correction –Hamming code Flow control-Stop and Wait Protocol	Chalk and Talk

7.	7 <sup>th</sup> week (19.2.18-23.2.18)	Sliding window protocol- Go back N, Selective Repeat ARQ-HDLC – Multiple Access protocol- IEEE 802.3 Ethernet.	Chalk and Talk & PPT
8.	8 <sup>th</sup> week (26.2.18-27.2.18)	Unit-IV- Network Layer Introduction -Packet switching and Datagram approach	Chalk and Talk
9.	9 <sup>th</sup> week (5.3.18-9.3.18)	IP addressing methods-Subnetting-Problems in IP Addressing	Chalk and Talk
10.	10 <sup>th</sup> week (12.3.18-16.3.18)	Routing- Distance Vector Routing-Link State Routing -Problems-Broad cast and Multicast Routing	Chalk and Talk
11.	11 <sup>th</sup> week (19.3.18-23.3.18)	Unit –V-Transport layer Introduction-UDP TCP-Services-Features-Header format-Connection	Chalk and Talk
12.	12 <sup>th</sup> week (26.3.18-27.3.18)	State Transition Diagram- Windows in TCP Flow control-Error Control	Chalk and Talk
13.	13 <sup>th</sup> week (2.4.18-6.4.18)	TCP-Congestion control-Quality Of Services Application Layer: Domain Name Space	Chalk and Talk
14.	14 <sup>th</sup> week (9.4.18-13.4.18)	Electronic Mail-WWW Cryptography Techniques-RSA-DES	Chalk and Talk

**COURSE ASSESSMENT METHODS (shall range from 4 to 6)**

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Assignment -1	4 <sup>th</sup> Week of Jan	1 Week	5%
2.	Cycle Test -1	2 <sup>nd</sup> Week of Feb	1 Hr	20%
3.	Assignment -2	1 <sup>st</sup> Week of March	1 Week	5%
4.	Cycle Test -2	3 <sup>rd</sup> Week of March	1 Hr	20%
5.	Compensation Assessment	1 <sup>st</sup> Week of April	1 Hr	20%
6.	Final Assessment *	4 <sup>th</sup> week of April	3 Hrs	50%

\*mandatory; refer to guidelines on page 4

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)**

- Student feedback will be collected at the end of semester through MIS.

**COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, academic honesty and plagiarism etc.)**

**MODE OF CORRESPONDENCE (email/ phone etc)**

- Students can communicate either through email or in person.

**ATTENDANCE**

- Students should maintain 75% of attendance. Students having attendance between 65% to 74% with valid reason can write the end semester exam after attending extra classes.

Students having less than 65% have to redo the course. If the reason for absence is genuine, the students can reappear for reassessment.

**COMPENSATION ASSESSMENT**

- Compensation Assessment is only for Absentees with genuine reason(Not for low achievers)

**ACADEMIC HONESTY & PLAGIARISM**

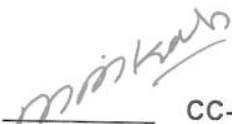
- Should participate in class discussion.
- Assignments should be submitted in time.
- Not to absent for cycle test.
- Maintain silence in class hours.

**ADDITIONAL INFORMATION**

- Students can clarify their doubts with faculty at any time with prior permission.

**FOR APPROVAL**

Course Faculty

  
R.Sasikala

CC-Chairperson

  
Dr.N.Ramasubramanian

HOD

  
Dr.R.Leela Velusamy